

Land Use Regulations Assessment

Town of Groton



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TOWN OF GROTON LAND USE REGULATIONS ASSESSMENT

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1. Introduction

1-1. Project Description

The citizens, elected officials, and staff of The Town of Groton are engaged in the initial stages of updating Town ordinances pertaining to land development. Kendig Keast Collaborative has been contracted to provide revisions to the Town's zoning, subdivision, and inland wetlands regulations in order to:

- Provide improved consistency with the *Town's Plan of Conservation and Development* (POCD), adopted in 2002, and the *Groton Strategic Economic Development Plan* (SEDP), adopted in 2006.
- Apply more contemporary land development standards and regulation practices.
- Bring certain provisions into better conformity with Connecticut Statutes and guidelines.
- Reduce the ambiguities that are present in the regulations and approval processes in order to improve the certainty of outcome that applicants will have when formulating their development plans.
- Provide greater emphasis on urban and suburban growth management, preservation of significant open space, clustering and conservation development methods—while continuing to support a balance between conservation and economic development.
- Improve organization and readability.
- In addition, the consultant will assist with the development of stormwater regulations and a new "Design Manual" to provide guidance for the proposed redevelopment of Downtown Groton. While any changes or additions to the ordinances will require formal adoption, the "Manual" would be advisory and would contain graphics and other information to help guide potential applicants with respect to appropriate landscape, architecture, hardscape, lighting and other project elements.

1-2. Existing Regulations

Zoning has been in effect in The Town of Groton for over 50 years and is presently administered in the form of a nine-chapter, 222-page ordinance by the Town's Office of Planning and Development Services (OPDS). As indicated in the Ordinance citations, a comprehensive rewrite was last undertaken and readopted in 1987. Since readoption, the Zoning Commission has adopted 73 text amendments, though the number of annual amendments has subsided considerably in recent years.

Since the effective date of the latest POCD update (2/1/02) there have been more than a dozen zoning regulation changes, all made in order to implement specific recom-

mendations of the 2002 POCD. As appropriate, some of those are discussed in this assessment.

Subdivision regulations were initially adopted in 1956; the current 33-page Subdivision Regulations document was last rewritten in 1980.

The Inland Wetland and Watercourses Agency was created in 1973 and has regulated impacts on wetlands and watercourses since that time, in accordance with applicable State Statute.

This report provides a commentary on the state of land use regulations in the Town of Groton. While it includes a critique of the current regulations, greater emphasis is placed on the text modifications and new provisions that will be recommended as this engagement continues. This report will serve as a guiding document for organizing and drafting these new provisions.

1-3. Stakeholder Meetings

The project was initiated by a series of meetings with the Town planning staff; members of the Town Council, Planning Commission, and Zoning Commission; and selected stakeholders having an interest in land development policy matters. The stakeholders included conservationists, developers and land use attorneys, real estate professionals, social service agencies, and persons responsible for promoting industrial and economic development. In addition to these stakeholder meetings, a public information meeting was conducted to explain the scope and approach to this engagement and to solicit initial citizen comments or opinions.

In general, the stakeholder meetings were highly constructive, as they gave participants the opportunity to discuss their overall observations and sentiments (both positive and negative) about development in the Town and offer constructive recommendations for possible changes in the regulations. Summaries of these meetings and lists of participants are included as a supplement to this report.

1-4. Summary of Findings

- Residential, commercial, and industrial developers need to have clearer and non-ambiguous development standards and regulations that improve their certainty of outcome when formulating their projects. Similarly, conservation advocates need assurance that the standards will preserve critical open space and protect unique natural resources. Money currently spent for lawyers would be better spent on architects and land acquisition.
- The existing codes are reasonably well-organized and well-written. Writers have avoided the undue use of “legalese” phrases, making the codes understandable by its primary users. While there have been many amendments and additions to the codes, care has been taken to avoid or rectify inconsistencies (the Zoning Commission has managed to avoid, what is called by some, “Frankencode”). Nevertheless, some of the provisions and standards are in need of updating and enhancement. For instance, the

Code could benefit from eliminating or reducing the need for excessive cross references between Code sections.

- The Town's adopted 2002 *Plan of Conservation and Development* (POCD) and the *Groton Strategic Economic Development Plan* (SEDP) contain many provisions that, in order to implement, will require adjustments or new regulations in the Zoning Ordinance and Subdivision Regulations. Many of these relate to natural resource protection and open space preservation. Others, particularly those in the SEDP, support changes in zoning policies to accommodate and encourage employment, investment, and housing opportunities.
- The code change recommendations in this report offer new techniques to achieve POCD and SEDP goals and objectives. Greater emphasis will be placed on providing better design flexibility, improving on cluster forms of residential subdivisions to preserve natural open areas, project design criteria for the enhancement of Downtown Groton, and other measures to accommodate development while preserving community character.
- There are many opportunities to simplify the Zoning Ordinance by combining some of the Town's 24 zoning districts, consolidating the specific uses listed in the Land Use Table, and replacing the many conditional use special permit requirements with improved objective performance standards.
- The current inland wetland and watercourses regulations generally follow the applicable State DEP model but should be updated to address changes in case law, upland review area standards, newer technologies, and perhaps the creation of a "tiered" review system based on the attributes of a specific resource.

2. Existing Plans and Development Patterns

A comprehensive plan forms a local government's foundation for future land development policies, intended public improvements, and land management regulations. Zoning, subdivision, and other ordinances are important *implementation tools* that help bring the plan about; these regulations' cumulative value, ultimately, is determined by how they perform "on the ground." That is, the ordinances' quality relates to how well they serve the planning objectives of the community. The adopted plans for the Town represent a departure from previous Town planning efforts. While continued economic development remains a strong element, the plans also recommend policies and implementation measures that promote stronger conservation of important natural resources, slower growth and curbing of uncontrolled suburban development, higher quality development, and greater efficiencies in providing public services.

2-1. 2002 Plan of Conservation and Development

The 2002 *Plan of Conservation and Development* sets forth the Town's vision and how it intends to develop (and redevelop) in the coming years. As it relates to the drafting of regulatory changes and new provisions, there are several value statements and planning objectives that these provisions will help to implement. The major POCD themes are listed

in the table below, *Plan of Conservation and Development themes*. Each one is assigned a section in the POCD, where it is addressed in detail.

The over riding theme or principle of the 2002 POCD is the integration of diverse goals and objectives into a coherent whole, thus offering a strategy based on balancing interests—as opposed to mandating false choices. The recommendations contained in this assessment have been designed to respect that principle.

Plan of Conservation and Development Themes	
Category	Theme
Conservation	Protect Natural Resources Preserve Open Space Protect Coastal Resources Protect Historic Resources Promote Community Character Enhance Community Pride and Spirit
Development	Enhance Physical Structure Encourage Appropriate Residential Development Encourage Appropriate Business Development
Infrastructure	Diversify Transportation Options Address Community Facility Needs Enhance Infrastructure Enhance Government Structure

Associated with each of the themes in their respective POCD chapters is a series of objective and policy statements, many of which provide specific direction and guidance toward the formation of regulation. Selected goal and policy statements that have direct linkage to Town zoning and other regulatory measures are listed below:

Natural Resource Protection

- Incorporate stormwater management provisions into the Town's zoning regulations.
- Use "best management practices" such as vegetative buffers and bio-infiltration islands.
- Redefine lot coverage to include all impervious surfaces.
- Examine current zoning standards regarding impervious surfaces, particularly in significant watersheds.
- Restrict clearing of steep slopes.
- Expand the regulation of inland wetlands to include areas within a certain distance from inland wetlands (upland review area) and watercourses.
- Conserve steep slopes, public water supply watersheds, areas of high groundwater availability, and unique or special habitat areas.



Open Space Preservation

- Establish, expand, and enhance an integrated greenbelt and trailway network. Require the identification and consideration of trails as part of any land use application.
- Acquire and open up additional public access opportunities to Long Island Sound, the Thames River, and the Mystic River.
- Amend the subdivision regulations to allow payment of fees-in-lieu of open space dedication with funds deposited in an open space acquisition fund. Allow donation of land elsewhere in Groton to meet the open space requirements of a development. (Note: this POCD recommendation was implemented by staff and the Planning Commission in November, 2005)
- Maintain subdivision regulations that require open space be deeded to the Town, a land trust, or other open space organization.
- Consider amending subdivision regulations to require a greater percentage of land be preserved for open space dedication. Strive to ensure that open space areas preserved as a part of development are not comprised entirely of wetlands, steep slopes, or other unbuildable areas.
- Provide a guide for future uses, activities permitted, and maintenance in required open space areas.

Coastal Resource Protection

- Continue to carefully manage activities in the coastal boundary in conformance with state law and with consideration of state policies and guidance.
- Continue efforts to improve public access.
- Continue to review regulations affecting coastal areas to ensure that there are adequate controls for cumulative development and appropriate siting of buildings within coastal flood hazard areas.
- Develop a protocol to address redevelopment of buildings severely damaged or destroyed after a major coastal storm.
- Encourage or require use of nonstructural shoreline erosion protection measures.
- Consider flexible yard requirements in coastal high hazard areas.

Historic Preservation

- Where appropriate, consider establishing village districts within the Town, overseen by the Zoning Commission in areas that remain unprotected by other legislative means.
- Amend zoning and subdivision regulations to allow the Zoning and Planning Commissions to require archeological surveys prior to construction.
- Continue to implement the 1996 Historic Preservation Plan recommendations.

Community Character

- Amend land use regulations to include protection of public scenic views, vistas, roads, and other elements, especially in coastal areas.
- Continue to encourage development patterns that contribute to, and enhance, the “sense of place” in order to promote the unique and appropriate character of each area and the overall community.
- Establish and maintain design review guidelines for commercial and multi-family development.

Groton’s Physical Structure

- Review and revise land use regulations to promote and enhance existing multi-use development nodes and establish new nodes in appropriate areas. Use mixed-use nodes as a major organizing feature in the future development of Groton.
- Avoid “strip” type development, enhance overall pedestrian and vehicular circulation, and address parking and circulation issues.

Encourage Appropriate Residential Development

- Modify regulations to encourage open space development patterns.
- Adopt a definition of buildable land and a density regulation that is applied to the amount of buildable land on a site. Consider other flexible development types that preserve meaningful open space.
- Re-evaluate the standards within and locations of the RMF, Residential Multi-family district.
- Re-evaluate the allowance of duplexes in zoning districts that are typically intended for single-family use. (Note: this has been accomplished by the OPDC and Zoning Commission.)
- Review the residential dimensional and bulk standards. Consider adopting a maximum floor area ratio to prevent the construction of houses that appear out of scale for the neighborhood in which they are situated.
- Review the conditional uses that are allowed in various residential districts. Add special use approval criteria to Section 8.3-8 of Zoning Ordinance text.
- Meet the specialized needs of a diverse community by maintaining provisions for accessory apartments, “empty nester” housing, and care facilities.

Encourage Appropriate Economic Development

- Simplify the list of commercial and industrial uses permitted in each district by using broad classes, rather than detailed descriptions.
- Establish a new, simplified hierarchy of business districts.
- Investigate ways to streamline or improve land use procedures to reduce approval time frames and uncertainty of outcome. Empower staff to make more permit and approval decisions.
- Change the Industrial Park district designation to “Business Park.”

- Encourage business developments in nodes and discourage strip type business development patterns. Consider using design districts to encourage the formation of commercial nodes. Consider the use of incentives to encourage this form of development. Resist pressures to rezone additional strip areas, preventing commercial “creep” along major roads.
- Evaluate current regulations to determine if uses, setbacks, and other requirements are appropriate.
- Discourage parking lots adjacent to the street that detract from the streetscape and pedestrian circulation.

Enhance Transportation Options

- Encourage access management strategies along major roadways. Techniques include providing more interior connections between parking lots, improved access from secondary streets, zoning provisions for shared parking, and standards for new or relocated access driveways
- Discourage establishment of private streets unless issues of liability for future improvement are addressed. Continue efforts to address issues pertaining to “unaccepted streets.”
- Update regulations to incorporate the latest roadway classifications.
- Continue to require sidewalks and/or trails for all new subdivisions.
- Undertake a comprehensive review of commercial parking standards.

2-2. 2006 Groton Strategic Economic Development Plan

The *Groton Strategic Economic Development Plan* (SEDP) was adopted in 2006 with the objective, “to set forth a strategic action plan for economy of Groton.” It provides a comprehensive evaluation of the Town’s strengths, weaknesses, and opportunities to improve job creation, tax base, and the overall climate commercial and retail investment. While most of this analysis focuses on local organizational and investment strategies, there is a significant portion that addresses community appearance, general configuration of recommended Downtown Groton enhancements, and zoning policies. The SEDP also reinforces many of the recommendations that had been presented in the POCD. Zoning related recommendations presented in the SEDP include the following:

Zone with Economic Development in Mind

- Implement new zoning standards for development in the DD district. The SEDP’s analysis of the Downtown Development district provisions identifies the need for limitations on building coverage, height, and other standards related to bulk and placement of building.
- Promote mixed-use development in the downtown. The analysis recommends that the ordinance be explicit in permitting various forms of mixed-use development, such as residential uses in the upper stories of commercial buildings.
- Only conditionally permit “big box” retail in industrial zones. By making large format retail development a conditional, rather than permitted, use in the IP-A district the Town will have a greater amount of discretionary review in the ap-

proval of applications. This would also enable the imposition of design and resource protection provisions that would make this form of development more acceptable as a part of a broader strategy to provide access and infrastructure to portions of the IP zoned areas.

- Promote a variety of housing types within Groton, from apartments to high-end single family developments. The SEDP addressed the need for a broader range of housing types to accommodate the diverse needs of the Town. The Zoning Ordinance needs to be more flexible in permitting more types of housing development in the residential districts.
- Create a new mixed-use, neo-traditional floating zone applicable to large sites within Groton. This recommendation recognized the presence of large tracts of undeveloped land between Route 117 and Flanders Road that has been zoned for industrial development for many years. Allowing greater flexibility in use types in selected areas creates the potential of leveraging residential, retail, and mixed use development to attain “critical mass” in a proposed development to support the costs of road and utility extensions.
- Continue to manage growth using the nodal development framework set forth in the Plan of Conservation and Development. The SEDP reaffirms the detailed proposals contained in the POCD, which were also implemented by the Town in the form of the MX (Mixed Use) Zone, adopted in 2007.

Development/Redevelopment and Aesthetic Enhancement Opportunities

- Provide appropriate zoning to accommodate flex space (low-cost buildings that combine office with production/distribution functions).
- Implement revised signage standards for the entire Route 1/Route 12 corridor. Improved sign standards in Section 7.3 of the Zoning Ordinance would, over time, contribute significantly to the improvement of the Town’s principal corridor. Implementing this, however, would likely require a comprehensive rewrite of the provisions—a task that is beyond the scope of this engagement.
- Preserve and enhance the Town’s historic, scenic, and open space resources to create both local and tourist amenities. This recommendation focuses on maintaining current levels of historic preservation, continuing to pursue new greenways/bikeways, improving access to existing parks, and making the protection of reservoirs and watersheds a priority.

2-3. Plan-Related Observations and General Recommendations

The Town’s *Plan of Conservation and Development* is a concise, well-written document that directly addresses many land use regulatory issues. The Ordinance remedial measures, paraphrased above, also appear in Section 18, Implementation of the POCD, and are prioritized. This section of the POCD also recommends that the Subdivision Regulations be revised to be made more “user friendly” and more consistent with the Plan. Recommendations contained in the *Groton Strategic Economic Development Plan* reaffirm the POCD goals that are related to land use regulations (mainly zoning) and provide

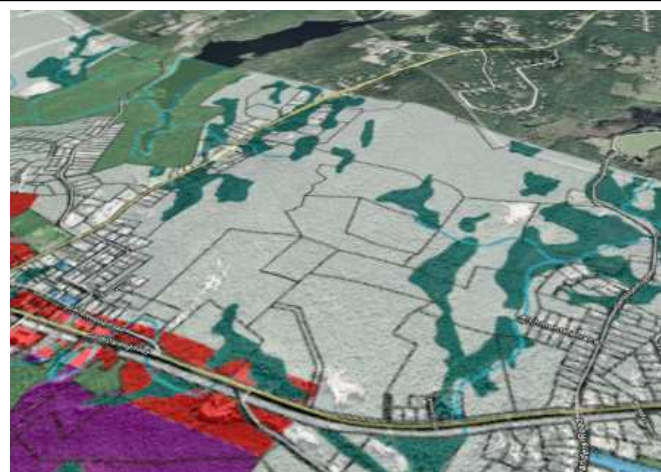
additional focus on zoning changes that might accommodate enhanced industrial, commercial, and housing opportunities.

Comments received and discussions conducted in the stakeholder interviews for this engagement have largely confirmed many of the goal, objective, and policy statements enumerated above. Most of the stakeholder and public comments, however, dealt with current political and procedural issues, rather than the long-range topics normally addressed in a plan document.

Development and trends that have taken place in six years since the current POCD was adopted reaffirm the importance of its recommendations.

- The need for open space preservation and natural resource protection becomes more urgent as the Town approaches its practical build out capacity. Higher levels of preservation, however, need be balanced with other legitimate town objectives.
- When touring the Town and viewing property maps and aerial photography, it was generally observed that many of the larger remaining tracts of undeveloped land have development constraints such as wetlands, steep slopes, or rocky soils. Conventional approaches to design and development of these remaining lands will not help, and will most likely inhibit, achievement of many of the Plan's community character goals.
- Open space and conservation cluster forms of residential development, which were described and strongly recommended in Section 11 of the POCD, "*Encourage Appropriate Residential Development*," have continued to gain in popularity throughout the U.S. The "open space cluster" example illustrated in Section 11 provides for 65 percent of land to be preserved as woodlands or meadow. The provisions of Zoning Ordinance Section 6.4, "*Open Space Subdivisions*," call for a minimum of 20 percent common open space. This represents an initial step toward accommodating cluster development. Provisions for higher levels of preservation, with the possibility of granting modest density bonuses in return, are needed.
- Dramatic increases in energy and fuel prices reinforce the importance of promoting compact development with mixed use development and robust pedestrian linkages.

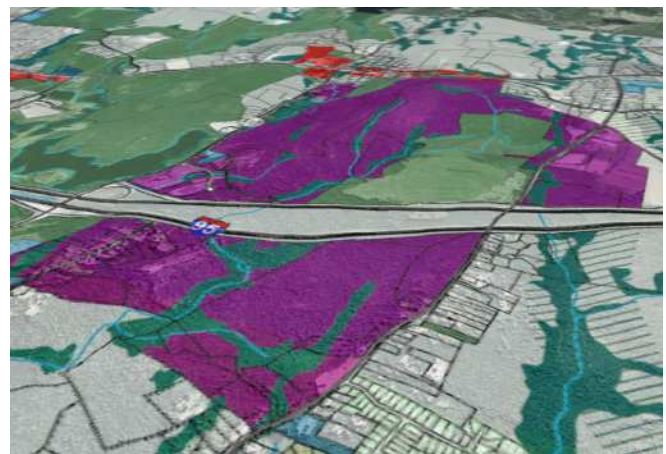
The POCD's Land Use Plan, along with the SEDP, recommends the concentration of new commercial development or redevelopment in established nodes, along with limiting "strip" commercial development along major roads. The Plan has classified all remaining undeveloped lands in the Town as "Low Density Residential" with typical densities of less than one unit per acre. Many of these areas are subject to natural constraints to development such as high bedrock,



Light areas north of Gold Star Highway designated as future Low Density Residential in Groton's POCD.

steep slopes, and ravine conditions that would limit the practical densities of development.

- Many of the same issues associated with low-density residential development also apply to the Town's future Business Park designation. Areas shown in the inset have been designated for corporate offices, light industry, R&D, and certain commercial uses for many years, and the land's plan designation and "IP" zoning classification have effectively prevented its residential development. The area is essentially a reserve for future economic growth-related activities. Yet, there are many natural constraints to conventional industrial park development in this area. Placement of large buildings with extensive parking areas will be extremely difficult and, unless carefully designed, will likely result in substantial runoff impacts. The hilly area north of I-95 and east of Route 117 will be particularly hard to develop as a conventional business park (though it may be well suited for a corporate campus with "green" buildings and extensive preservation of natural areas).
- Groton has an abundance of *permanent* open space under a variety of public and quasi-public ownership arrangements. The Town and its citizens have continued to acquire additional land since the POCD was adopted. Several of the land areas indicated in light green in the inset have been acquired by the Town, or through the efforts of private organizations. The cumulative effect of these acquisitions, when completed, will be the creation of a near-complete greenbelt between Mystic, Noank, and Groton Long Point and the remainder of the Town. The POCD identifies the significance of greenbelts and open space preservation as aesthetic and recreational amenities along with its importance in protecting water resources. Whether through outright purchase, donation, or conservation



Lands Designated as Business Park in Groton's POCD.



Existing and potential open space (light green), as shown in Groton's Land Use Plan.

easements, preservation of natural resources will continue to be crucial in maintaining Groton's Town character and mitigating impacts from residential and economic development. This will be reflected in recommended regulatory changes.

- Many references have been made in the POCD to provide for mixed commercial and residential development. This trend is common throughout the U.S., and there are many examples of successful mixed use projects that invigorate declining central business districts or transform sterile suburban malls into vibrant activity centers. Since adoption of the POCD, the Town has amended the Zoning Ordinance to add an "MX Zone" to encourage design innovation and provide for a mix of residential, commercial, and office uses.

1. MX classification can be applied to areas within four specific nodes identified in the Ordinance.
2. Its provisions allow for flexibility in specific standards as long as a proposed development complies with absolute acceptance criteria including minimum site area (three acres for Downtown Groton and five acres for the other three nodes), availability of public sewer and water services, building height maximum, and a comprehensive list of approved uses.
3. The Zoning Commission is the approving authority for MX designation. Just as with any other rezoning or text amendment, any proposal disapproved by the Planning Commission's review process requires approval by a supermajority of the Zoning Commission.



The provisions of the MX Zone are thorough and were adopted after an exhaustive public review process. The only suggestions for its improvement would be:

1. Specific provisions requiring projects in the MX Zone to reasonably comply with the environmental protection and open space preservation standards that are being proposed in this analysis for all districts in the Town. The open space preservation requirements should be less stringent than in other parts of the Town to provide for an "urban" character form of development—"overprotection" of open space and natural resources could result in automobile-dependent, suburban forms of development.
2. Improved assurances that the commercial components of a project actually get built. Some jurisdictions' mixed use provisions include phasing requirements that specify that only a fraction of the proposed residential units can be issued building permits until a substantial portion of the commercial development is completed.

3. Improved standards for the containment and handling of commercial refuse and recyclable waste. Residential occupants of mixed use projects will be highly sensitive to the nuisances of exposed refuse containers, the large quantities of refuse generated by restaurants, and the noisy nighttime scavenger pickups and grease trap emptying operations.
4. Refinement of the listing of permitted commercial and institutional uses. The MX Zone's list of permitted uses appears to have been based on the Use Table in Section 5.1-3, which is outdated. For example, reference is made to "Radio, Television, and Phonographic Equipment" as a permitted retail trade category; this could be better stated as "Personal Computers and Consumer Electronics." Shoe repair is permitted, but clock repair is not.

3. Recommended Major Zoning Ordinance Changes or Additions

3-1. Zoning District Provisions

The zoning ordinance updating process routinely attempts to identify opportunities to reduce the number of zoning districts, replacing them with appropriate performance standards that address the subtle differences between one form of development and another within the same land use classification.

One of the most obvious problems with the Town's Zoning Ordinance is that, despite attempts to gain control of development with many specialized zoning districts and breaking down land uses into narrow categories, the quality of the development that has occurred over the past 30 or so years is largely similar to development anywhere in the country, not unique and complementary to Groton's historic character. Two facts from this analysis stand out:

- There is one zoning district for every 1,722 people.
- There is one use classification for every 200 people.

The 24 zoning districts (25 if the water resources protection overlay is counted) and 207 specific land uses listed in the Land Use Table provisions (Section 5.1-3) is a symptom of a highly programmed attempt to control development in the Town with increasingly precise zoning.

Recommendation #1 Land Use Table Changes: Reduce the number of zoning districts and revise their provisions to add flexibility.


- The code should be based on a relatively small number of zoning districts that have distinct community characters.
- The district provisions should be more flexible, permitting a wide range of housing types or land uses.
- There should be strict standards that protect the character and quality of the community, promoting development that creates places and is sensitive to the environment and neighbors.



- Update the Use Table in Section 5.1-3 of the Zoning Ordinance to reflect any consolidations of districts.

Early work in the ordinance rewriting process may be to simplify the Land Use Table and to consolidate the number of zoning districts. The recommendation is to reduce the 24 existing districts down to nine or fewer districts.

- There are ten commercial districts and only two or three are needed. The Town has a need for a real urban center, and a district is needed to encourage the redevelopment of the downtown area of strip development along U.S. 1, beyond the downtown Mixed Use (MX) zone node, to an urban environment and to encourage mixed uses that provide housing and bring a greater vitality to this area. There are strip commercial areas that have relatively small lots; these need to have a district that respects their low-intensity, automobile-access nature. Thus, an auto-urban commercial district is needed.
- One new residential district will be required. This is a neighborhood conservation district. Because it is recommended to eliminate most of the existing residential districts, a neighborhood conservation district is needed that protects all existing subdivisions and maintains their conforming status.
- There are 11 residential districts in three basic categories: rural, suburban, and urban (or auto-urban) character. A district for each of the three character types is all that is needed. There is a choice between two urban character types. This is not a density or use issue, but a design decision. Currently, the Town's regulations define each residential district by lot size, which creates the potential for conflict with existing developments whenever a developer proposes or develops in an adjacent zoning district with a different zoning classification. This often results in a rigid "cookie cutter" approach, which makes it difficult to implement an environmentally sensitive site plan. In conjunction with consolidating the 11 existing residential districts into three, nearly all housing types and a wide range of lot sizes would be permitted as a matter of right. Instead of lot size controlling the scale of development, a combination of density and open space requirements would control. This approach ensures that, regardless of the developer's market choice, the character of the area will be preserved.
- There are four industrial districts. In general, the current situation in America favors what is known as business parks, which are a mix of industry, wholesale, office, and other uses. This trend is reflected in the Town's three current IP districts. These areas stress quality, and this should be the primary district. Another industrial district may also be required for existing industrial uses. Also, the *Groton Strategic Economic Development Plan* recommends greater flexibility in allowing limited forms of commercial and residential development as a Conditional Use in the IPA (sewered) district in order to make a mixed-use development area more attractive to road and utility extension.



Recommendation #1a: Uses in the IPA District. Consider modifying the Zoning Ordinance Use Table in Section 5.1-3 to allow a broader variety of uses in the IPA district, thereby making areas more attractive for street and utility extensions.

- The Nautilus Memorial Design District (NMDD) is a small, special purpose district that was established near the entrance of the Nautilus Memorial to induce high quality, tourism-based commercial development and mixed residential and commercial growth. The district boundaries appear to have been carved out of the surrounding RU-20 district. After nearly 14 years, this development has not materialized.

Recommendation #1b: Possible NMDD Elimination. Consider eliminating the NMDD and reclassifying the land back to its original designation. The Nautilus vicinity has been designated as a potential node for the MX mixed use zone, so future urban growth in the area remains a possibility, even with the revisions.

3-2. Flexible Zoning

The current zoning is very rigid; for residential, there is little opportunity for a developer to work creatively with a site other than by losing density. What is little understood is that this is a negative pressure that makes protection of resources or creating a more attractive design uneconomical. In general, either good design or resource protection requires the developer to reduce the number of lots and lose value. At the same time, this generally translates into more land dedicated to streets, sidewalks, and utilities per unit. Thus, while the potential value of the development declines, the costs increase. This is not a rational approach to achieving the Town's goals. The same is true for nonresidential uses – if the Town wishes to promote a more urban mixed use character, then the regulations need to promote flexibility so that developers can make projects work.

To this end, all residential uses should be permitted by right in all non-industrial districts. This allows the developer to select the housing product that is anticipated to sell, rather than have to seek a rezoning or a special permit to meet the need. (This also introduces the possibility of integrating residential development into a commercial district without requiring use of the MX Zone.) Because the character-based districts are regulated on a maximum density and a minimum open space ratio, there is a self regulation that protects the intended character. If the developer selects a housing type with a smaller lot size, the result is that the developer must preserve more natural area to stay within the maximum density limit.



Recommendation #1c: Encouragement of Mixed-Use Development.

Update the Use Table in Section 5-1 of the Zoning Ordinance to permit by right a wider array of residential development forms in all residential and, possibly, commercial districts. Adopt performance standards and stronger landscape buffering requirements that mitigate potential land use conflicts within mixed use development areas.

The three variations of the industrial park district (a, b, and c) are related to availability of water and sewer. The presence or absence of infrastructure becomes the controlling factor. This allows broad industrial classifications to be used, rather than the current 46 outdated industrial use classifications enumerated in Section 5.1-3. These pre-1950s classifications of use were – in their time – clear indicators of the type of use, its noise, pollution potential, truck or rail traffic, and other factors. That has all changed in the past 50 years. An example of this is a stamping mill. Such a use incorporated heavy, noisy equipment to stamp out metal parts, many of which were large and required rail or large trucks to ship. Today, a stamping mill may have raw materials and finished product shipped *via* parcel delivery services and has little noise even in the building’s interior. The use classification is no longer as useful.

As an example of a more contemporary industrial use category, a participant of one of the Groton stakeholder meetings mentioned the need for industrial “flexspace” to accommodate a wide variety of light manufacturing and storage activities. Another related, though more residential, use category is artist “live-work” space – a combination of residence, studio, and gallery uses.

Of the 49 retail uses listed in the CA, CB, and DD commercial districts, 40 are permitted in all three zoning classifications and only nine have some differences. In nearly every case, the use could be controlled by design standards so that it is compatible in all three districts. Whatever distinctions need to be made with commercial can more than adequately be handled with two commercial districts. It is anticipated that 15 or fewer commercial use categories are required in the Use Table.

Recommendation #1d: Modernize the Land Use Classification System.

Update the Use Table in Section 5.1-3 of the Zoning Ordinance to consolidate and modernize the specific land use categories in the left hand column.

3-3. Environmental and Resource Protection Standards

Considerable concern was expressed at the conservation group stakeholder meeting and public forum about the need for protection of undeveloped land and natural resources. There are two primary approaches that can be taken to enhance the Town’s Zoning Ordinance to provide additional conservation and environmental protection: open space preservation standards and protection of natural resources.

- Minimum natural open area preservation requirements need to be applied to, at least, the RU, RS, R, and IP districts. Incentives need to be provided for cluster developments that preserve undeveloped areas beyond any minimum requirements. The Zoning Ordinance also needs to reinforce any requirements to provide recreation land that are contained in the Subdivision Regulations. Beyond that, outright purchase or donation is the normal way in which recreation land and natural areas are accumulated. Simply declaring land “unbuildable” as a means of forcing the preservation of open space is likely to lead to litigation and a subsequent determination by the courts as a “taking” of private property rights.

Recommendation #2: Open Area Preservation. Supplement the “Lot, Yard and Building Requirements by Zoning District” table in Section 5.2 of the Zoning Ordinance with a new column containing minimum open space ratios for each district. These would range from 0 in urban districts, to .10 for conventional development in the suburban districts, to .35 for suburban clustering, to .60 and higher for the RU rural districts.

- The protection of natural resources is another issue entirely; critical natural resources that affect the community are considered to be public assets and should be protected. Specific natural resource protection standards can be established, and each site can be subjected to a resource survey and site capacity analysis that determines the development capacity of the site. Achieving this removes the uncertainty for citizens and land owners alike as to whether there is an adequate sensitivity to the environment. For example, conceptual resource protection standards that might be considered for the Town are as follows:

Conceptual Resource Protection Standards			
Resource	Open Space Ratio (OSR) or Landscape Surface Ratio		
	RU District	RS and IP Districts	All Other Districts
Water Bodies	1.00	1.00	1.00
Floodway	1.00	1.00	1.00
Floodplain	1.00	1.00	1.00
Wetlands	1.00	1.00	1.00
Riparian and Wetland Buffers	0.90	0.90	0.70
Woodlands	0.90	0.60	0.20
Steep Slopes (>25% grade)	0.95	0.85	0.55
Steep Slopes (15% to 25% grade)	0.85	0.60	0.20
Wellhead Protection Areas	1.00	0.60	0.70
Source: Kendig Keast Collaborative			



Recommendation #3: Natural Resource Protection. Supplement the Zoning Ordinance with specific site resource survey and natural resource protection standards that determine the development capacity of the site for alternative forms of development. This will remove the uncertainty for citizens and land owners alike as to whether there is an adequate sensitivity to the environment.

3-4. Septic Tanks in the Sewer Avoidance Area

One major problem that was observed is the State-mandated Sewer Avoidance Area, which forces the provision of septic tanks and leaching tile fields. There appears to be no areas of widespread system failure, and the Ledge Light Health District has always been able to work with land owners to correct failed systems. That is not the real environmental problem with septic tanks – septic tanks simply do not treat wastes to the same degree that a sewage treatment plant achieves. The nitrate and phosphorous discharges from septic tanks are high, thus leading to ground and surface water problems. Further, there are increasingly a whole host of chemicals, bacteria, and viruses that pass through these systems (some of these pass through treatment plants, as well). The other problem is that septic tanks require large lots. This means that, in addition to the loading from residential septic tanks, there are likely to be loadings from lawns and a greater loss of forest than from compact cluster development.

Recommendation #4: Clustering in the Sewer Avoidance Area. Clustering in the Sewer Avoidance Area should be designed to be accommodated by the best allowable group septic systems, which means (under current State regulations) they should be limited to nine or ten units. In addition, provisions should be made in the Zoning Ordinance to allow more intensive clusters that require sewers—should the Town and developers ever succeed in getting relief from current State rulings.

3-5. Cluster Subdivisions and Development

As mentioned previously, the Zoning Commission adopted open space subdivision provisions in 1991 that require that 20 percent of the project area be dedicated as public open space. In return, the developer is afforded relief in lot size and yard requirements. Since no density bonuses are provided, the main incentive is added flexibility in design. Because most remaining undeveloped areas contain large areas with steep slopes, wetlands, or flood zones, this option has become more commonly used by developers.

The Town should consider additions to the Zoning Ordinance that create an effective incentive to cluster developments and subdivisions that preserve larger amounts of open space, as recommended in the POCD and SEDP. Clustering provides the community benefit of protecting natural resource areas, providing additional dedicated open space, and maintaining the perception of a natural or rural community character.

Typical clustering provisions are illustrated in the following table. At this stage of analysis, they are only hypothetical and will require further discussion and refinement before any

specific regulation amendments can be drafted. The first three examples are based on the Town's current RS-20 District density standards. The current open space subdivision option in Section 6.4 requires 20 percent open space protection; in return it affords the developer greater flexibility by allowing smaller lots. However, many sites require more open space preservation to actually protect resources. The cluster option examples could, as shown in the table, require a minimum open space of 40 percent and provide the slight incentive of allowing for additional units. A conservation cluster with 65 percent open space is also feasible. Given the resources present on most remaining sites in the Town, these are the better design alternatives. The last three options in the table illustrate the cluster principal as they might apply to the Town's RU-40 District.

Conceptual Residential Cluster Standards					
Development Type	Min. OSR	Max. Gross Density ¹	Max. Net Density ²	Required Utilities	Estimated Yield on a 40-Acre Tract ³
Conventional Single-Family (existing RS-20)	0.10	1.510	1.700	Public	60 units
Open Space Subdivision (existing RS-20) with 10,000 sq ft. lots 80 feet wide	0.20	1.740	1.742	Public	69 units
Cluster with 10,000 sq ft. lots 80 feet wide	0.40	1.697	3.025	Public	67 units
Cluster (conservation) with 5,000 sq. ft. lots 50 feet wide ⁴	0.65	1.706	5.957	Public	68 units
Conventional Single-Family (RU-40 with 10% open space for detention)	0.10	0.824	.918	Septic	32 units
Cluster (conservation) with 15,000 sq. ft. lots 90 feet wide	0.55	0.914	2.171	Group Septic	36 units
Cluster (preservation) with 5,000 sq. ft. lots 50 ft. wide ⁴	0.80	0.862	5.957	Group Septic	33 units
<p>1. Gross Density is the number of units per total site area and assumes 50-foot street right-of-ways.</p> <p>2. Net Density is the number of units per total site area minus required open space but including roads.</p> <p>3. Yield calculations assume the natural resources requiring protection can be protected at the open space level in the second column.</p> <p>4. The ability to achieve desirable 5,000 sq. ft. lot configurations will be contingent on slopes and other site characteristics.</p> <p>Source: Kendig Keast Collaborative</p>					

Recommendation #5: Enhanced Clustering Provisions. Adopt residential clustering standards that provide modest density bonuses for "conservation" and "preservation" clusters with open space ratios of .65 and higher. Adopt provisions that restrict the types of activities that are permitted within the preserved undeveloped areas to assure low intensities of usage.

Cluster Example

A design analysis was conducted on the site of an existing development in Groton to compare clustering with more traditional forms of residential land development. The Mystic Weigh Subdivision (below) was approved in 2004 and has been completed and built out. The subdivision has 76 lots on a 45-acre tract in the RS-20 district. The effective density (total site area divided by number of lots) is approximately 1.7 units per acre.



Project, as Built. Developed under the Sec 6.4 Open Space Subdivision option, 16 acres of open space were preserved. This natural area, in the eastern quarter of the development, is a ravine section of Eccleston Brook and includes floodplain, wetlands, steep slopes, and wooded areas.



Conservation Cluster Alternative. This conceptual alternative layout provides for the same number of lots in a more clustered arrangement on smaller lots. The combination of natural area, boulevards, and parkways preserves 27 acres (60 percent) of open space and provides an extensive network of internal trails and pathways in a park-like setting. Another alternative concept, suggested by OPDS staff, would be to expand the open space westerly to create a broader connection to the existing open space to the north.

3-6. Stormwater Management

Stormwater and the potential for runoff (nonpoint) pollution are specific concerns of the Town, particularly as it approaches, from a practical standpoint, build out. While the Zoning Ordinance addresses new development and redevelopment, there very well may need to be improvements to the current storm sewers and other stormwater system components that go beyond the scope of this engagement.

The existing Zoning Ordinance includes specific stormwater management provisions and standards for the Water Resource Protection District, as cited in Section 6.12-5C. These provisions, which consist of a series of specific stormwater measures, were adopted in 2003 to protect the downstream reservoir. Required stormwater management measures are also referenced in the Mixed Use (MX) District provisions in Section 6.13-5; here, reference is made to requiring a stormwater management plan that is “based upon the most recent State of Connecticut Department of Environmental Protection model.” Additional provisions and standards are needed that would generally apply to development in all districts.

Recommendation #6: Stormwater Management Requirements. A new section on stormwater management is recommended for the Zoning Ordinance. It would closely tie to the best management practices provided in the Connecticut DEP Handbook and would also include provisions such as:

- Storm frequency design assumption (e.g., 10-year storm).
- Pervious surface requirements for each zoning district.
- Pass-through runoff requirements: the provision that all drainage plans shall accommodate the runoff that enters the site from other locations in the tributary watershed.
- Provisions for runoff exit volume and velocity characteristics.
- Requirements and methods of conveyance for drainage easements.
- Standards for discharges from sump pumps, downspouts, footing tiles, and other site specific stormwater sources.
- Design requirements for detention basins.

The recommended clustering provisions are also a very important tool for stormwater management, as they achieve a reduction in nonpoint pollution by two means: reducing total impervious cover and leaving more woodlands intact. Woodlands are the best land cover possible for this purpose. Woodlands result in lower runoff than any other cover type, they clean runoff surface and subsurface of pollutants such as nitrates and phosphorous, and they provide higher levels of groundwater recharge.

In recent years, OPDS staff has succeeded in getting developers to implement best management practices for onsite stormwater management such as rain gardens and



depressed landscaped areas, even though these provisions are not specifically mandated in the Town codes.

Another effective approach to stormwater management that has begun to emerge is the use of green (vegetated) roofs on large new buildings. While the application of green roofs is only one technique that can be used to get at LEED ratings, it is in terms of stormwater management, a superior tool that has additional benefits.

- Green roofs reduce peak and total runoff. The reductions in peak flows ranges from 80 to 90 percent; total runoff by about 50 percent. Also, as an added benefit, the time of concentration is reduced. Overall, this reduces the loadings and size requirements for traditional stormwater system components.
- Nitrate loads are reduced significantly by green roofs.
- They reduce the heating and air conditioning costs of the buildings and decrease the heat island effect in urban areas, which means less demand for air conditioning, thus conserving energy.



Recommendation #7: Stormwater Best Management Practices. Update the Zoning Ordinance to refer to the latest best practices measures, including the extensive provisions of the *2004 Connecticut Stormwater Quality Manual* and new types of pervious paving materials.

- Expand and update the current regulations (Section 6.11) to include current practices and provisions for inspections of temporary runoff control measures during construction. (Single-family dwellings on individual lots are currently exempt and should remain exempt—a common practice because subdivisions are required to comply at the time of development.)
- Consider requiring compliance for residences on parcels that are not part of an earlier approved residential subdivision.
- The use of green roofs should be included as a best management practice in the stormwater regulations to be added to the Zoning Ordinance.

3-7. Erosion and Sediment Control

As with stormwater management, many new measures for erosion sediment control have been developed in recent years in response to the need to protect fragile waterways, wetlands, and estuaries from siltation and accumulation of pollutants, particularly during site development and construction activities. The Town currently follows the applicable

DEP model and should update the local erosion and sedimentation regulations as appropriate and necessary.

3-8. Green Buildings and LEED Certification

The development of “green” buildings has become increasingly important to communities as a means of promoting greater energy efficiency, reducing CO₂ emissions, improving drainage, and protecting other environmental resources. The decision to require or use bonuses for Leadership in Energy and Environmental Design (“LEED”) certified buildings is a policy issue that is being seriously considered by many jurisdictions in the U.S. The Town of Groton is one of the leaders in this trend; it has already adopted provisions for a density bonus for green building, LEED, and other sustainable development measures in the Mixed Use (MX) zone.

Recommendation #8. Green Buildings and LEED. The use of density bonuses for green building, LEED, and other sustainable development measures should be broadened to include development in all commercial, industrial, and multifamily zoning districts.

4. Miscellaneous Zoning Ordinance Recommendations

4-1. Definitions

Overall, the definitions are in good shape. They are clear, concise, and entirely avoid the inadvertent inclusion of performance standards within the definition statement. New definitions will be needed for the added resource protection and clustering provisions. Approximately ten of the definitions should be brought up to date or tightened.

Recommendation #9: Definitions. Supplement and update definitions as needed.

4-2. Procedures

The existing Zoning Ordinance includes detailed descriptions of procedural requirements for:

- Zoning permits and certificates of compliance (Zoning Official),
- Zoning amendments (Zoning Commission),
- Special permits (Zoning Commission),
- Site plan review and approval (Planning Commission),
- Administrative site plan approval (Zoning Official),
- Coastal site plan review (Planning Commission),
- Appeals and variances (Zoning Board of Appeals), and
- Subdivision approval (Planning Commission)

These sections appear to be complete, with the following exceptions:

- The use of diagrams or flowcharts would improve the understandability of these processes.
- The procedures for notification and conduct of public hearings are explicitly, though unclearly, stated in Section 8-7d of Connecticut General Statutes. While there are some references to these provisions in the Zoning Ordinance, it would serve a useful purpose to include clear descriptions of the procedures in the Ordinance itself.
- There are no written provisions for sign permits other than reference to signs requiring a zoning permit. Because of their limited, but specialized, scope of the sign approval process, most jurisdictions establish unique application and approval procedures.
- There are no written provisions for the approval of temporary uses such as carnivals and fairs, seasonal sales, special events, or temporary signs and banners. These activities are normally exempt from customary permitting requirements because they do not involve land development or building construction.

Recommendation #10. Zoning Procedural Changes. Make minor changes to the Zoning Ordinance procedural sections so that written provisions reflect actual practices.

4-3. Accessory Buildings and Outdoor Storage

The current restrictions on height and size of accessory buildings within required yards appear to be appropriate. Some of the provisions may need to be expanded to accommodate the smaller lot sizes associated with cluster development. The maximum size specified for accessory buildings is 20 percent of the required rear yard, with no maximum size specified.

Recommendation #11. Accessory Building Standards. Specify a maximum size restriction for accessory buildings such as garages or pole barns.

There appears to be no provisions restricting outdoor storage of commercial goods. When unregulated, this often becomes a problem associated with large chain retailers that store inventory outdoors in shipping containers for long, often indefinite, periods of time.

Recommendation #12: Outdoor Storage of Merchandise. Establish size, location, and duration standards for storage of merchandise associated with commercial activities.

4-4. Temporary Uses

These provisions need additional detail related to the types of uses, enforcement, application, submittal requirements, and approval process.

Recommendation #13: Temporary Uses: Expand the provisions regulating temporary uses.

4-5. Bed and Breakfast Facilities

The *Groton Strategic Economic Development Plan* recommended the establishment of bed and breakfast enterprises in the Town, particularly on the Town of Groton side of Mystic. There are no references to bed and breakfast facilities in the Zoning Ordinance. Hotels and motels are defined as lodging for 12 or more patrons; it is unclear how smaller facilities are currently handled. Bed and Breakfast facilities, when regulated properly, can be compatible with established residential neighborhoods.

Recommendation #14: Bed and Breakfast Standards. Add provisions for bed and breakfast facilities.

4-6. Performance Standards

Performance standards are a means of controlling the appearance, function, or nuisance potential of a use or uses. For example, requiring landscaped buffers is a performance standard that protects a less intense use from adverse impacts from more intense uses. Noise, odor, lighting, and other potential pollutants can all be addressed with performance standards that limit conflicts. Landscaping is a crucial performance standard because it also helps to define the scale and visual character of an area. For instance, in many neighborhoods, street trees have not been planted in the public right-of-way (between the streets and sidewalks), but on front lawns. This prevents trees from arching over the street, which is a highly prized characteristic of residential development.

Performance criteria can control the size or scale of a use, its location, its reliance on public water or sewer, and special site planning requirements. A number of uses have grown dramatically in size in recent years, so that what once was an acceptable neighborhood use has morphed into a regional-sized facility. It is possible to use performance standards to limit the locations of large-scale uses to major roads, while permitting smaller uses on most roads in the Town. Where residential uses abut a busy highway, there is often a tendency for them to decline and deteriorate. It is possible to permit uses in those situations in a district where normally they would not be permitted by linking them to the road access and imposing special design standards. Many of the performance standards may limit or control development. However, performance standards can also be designed to provide incentives to developers that do specific things. For instance, density increases can be used as an incentive to a developer to assemble a larger property that has greater potential for mixed use in an intended urban area.

Of the 207 land use classifications in the Zoning Ordinance's Use Table, 45 (22 percent) have the status of "conditional" uses (requiring site plan approval by the Planning Commission) in at least one zoning district. While there are communities that are worse in this matter, this is far too many uses. Because all of these conditional uses already have performance standards associated with them (referenced in Section 7 and listed in the left hand column of the Use Table), many of these can be changed to permitted uses, subject to the Section 7 performance standards.



Recommendation #15: Conditional Uses. Consider reducing the number of conditional uses in the Zoning Ordinance's Use Table.

4-7. Watershed Resource Protection Overlay District

This overlay district is intended to provide higher standards for runoff control, spill management, and pollutant discharges within the Groton Utilities' public water supply reservoir. The Connecticut Department of Public Health maintains stringent control over the sale and use of water supply lands; the WRP District provisions are intended to comply with State requirements. The regulations prohibit landfills, hazardous use handling as a principal use, junkyards, most automotive services, and many businesses with incidental chemical usage, such as a photo lab, in unsewered areas. Additionally, there are more stringent requirements on lot coverage and stream buffer requirements than would normally be exercised within the underlying district.

OPDS staff has observed that the extent of the WRPD is excessive and does not bear any relationship to the value and functions of specific critical parcels or land attributes in regards to protection of the water supply. There is currently a state funded study underway (DWQMP), which may provide information that would help refine the WRPD to make it more effective. Also, as noted previously, State policies as to sewer avoidance and septic disposal options create impediments to the introduction of development forms that are more sensitive and successful in protecting resources (cluster).

Recommendation #16: WRPD Overlay Provisions. The Town should consider a more detailed analysis of the WRPD and potential amendments.

- This should include a tiered designation reflecting valid distinctions between critical lands and those simply in the watershed, clarification of how the WRPD relates to residential subdivision development, greater emphasis on cluster development, and clarified and perhaps expanded standards appropriate to the tiered designations.
- These provisions will be reviewed and updated in the context of the proposed revisions to the Zoning Ordinance's Section 5.2-7 Land Use Table and to current best management practices in other similar areas.
- Consideration should be given to either reducing the density provisions of the underlying residential districts or requiring mandatory cluster development.

4-8. Manufactured Housing Parks

The Zoning Ordinance allows only for the expansion of existing parks, with no increase allowed in the number of units, in order to improve conditions by increasing the amount of open space. It is also noted that a significant mobile home park in the Town has recently shut down.

It appears that the open space subdivision provisions (Section 6.4) were adopted as a means of accommodating future manufactured housing communities; they allow for up to 50 percent occupancy by “single-wide” manufactured homes as a special permit condition in the R, RS, and RU districts. The one main difference between a traditional manufactured housing park and Groton’s open space subdivision provisions is that, under the Town’s current provisions, each lot must be platted and recorded under the Subdivision Regulations requirements rather than being maintained as a single site owned by the park’s proprietor. These provisions have been in effect for 17 years. Further discussion with staff and the two commissions should take place to determine the adequacy of the current provisions.

4-9. Off-Street Parking Requirements

The Zoning Commission has made many additions and adjustments to the off-street parking regulations in Section 7.2 over the years. In general, the standards are in line with common practices of other communities that are the size of Groton, with the following possible exceptions. Parking requirements were discussed in two of the stakeholder meetings. General concern was expressed that the regulations may be overly strict for retail uses, resulting in large areas of expensive, unused paving.

Recommendation #17: Parking Regulations. Review and make minor modifications to the Town’s parking regulations, bringing standards into compliance with current practices.

- Specific examples include restaurants, bars, and public buildings.
- To enhance readability, the enumeration of parking lot space requirements in Section 7.2-3 could be better presented in the form of a table. Also, illustrations of parking lot configurations (showing parking space dimensions and aisle widths) would improve the section.
- Consider establishing standards for bicycle parking, particularly for shopping malls or larger facilities.

4-10. Lighting Standards

Lighting standards in the Town’s Zoning Ordinance should be more specific and should provide reference to:

- The general requirement for use of “no cut-off” fixtures.
- Conditions and standards for the use of decorative “cut-off” fixtures.
- The use of energy-efficient light bulbs.
- Maximum heights for freestanding fixtures (25 ft.).
- Maximum illumination levels to prevent glare and light over spill onto neighboring properties. This is a particular issue with auto dealerships.
- Provisions for wall-mounted and canopy lighting to protect automobile drivers from glare onto the street.

- Provisions for lighting of outdoor ballfields, courts, and other athletic facilities. These are often found within or adjacent to residential areas.

Recommendation #18: Lighting Standards. Enhance and update lighting standards.

4-11. Landscaping, Screening, and Buffer Areas

Generally, the Town's requirements appear satisfactory and easy to administer. No concerns about landscaping requirements were raised in the community and stakeholder meetings. Nevertheless, a number of adjustments would improve conditions.

Recommendation #19: Landscaping, Screening, and Buffer Provisions.

- Provisions in Section 7.4-2, "*General Requirements*," for protection of specimen trees need to be made more specific. (The definition of "specimen tree" should be determined through consultation with appropriate local officials.)
- While reference is made in this section to the protection of existing stone walls, further determination is needed regarding whether the regulations to protect these assets should be strengthened. Some communities have adopted provisions regulating their removal or requiring their relocation if absolutely necessary.
- Buffering effectiveness can be measured by using the percent opacity. All buffering standards need to be reviewed in that light.
- The ten-foot buffer strip contiguous to the front lot line for commercial and industrial districts may be too constraining to provide for the protection of mature trees. The standard could be rewritten to provide for a comparable area with an *average* width of ten feet, but with variations in buffer width to provide greater design flexibility in preserving existing trees.
- Required shade trees should be planted within the parkways, not in the front yards.
- Lists of recommended and prohibited tree and shrub species should be added as an appendix.
- Buffer area standards should include a minimum number of canopy trees, understory trees, evergreens, and shrubs per 100 sq. ft. (average). The standards should allow variation in placement of trees to avoid monotonous lines.
- Parking lot perimeter buffer areas, when constrained to seven feet or less, should be required to include a wall or hedge.
- Provisions should be added to require the replacement of non-surviving trees for development projects.
- Review and make minor updates to the landscape buffering standards.

5. Subdivision Regulations

5-1. Subdivision Design Requirements

The design requirements and geometric standards in Section 4 will require adjustments in various places to accommodate the recommended clustering and natural resource protection provisions added to the Zoning Ordinance. For example, Paragraph 4-1(5) provides reference to the Planning Commission's determination of "unsuitable" lands, but states no basis on how this is actually performed. The new environmental resource protection standards that are being recommended for the Zoning Ordinance, if adopted, will solve this issue and allow this paragraph to be reworded.

Recommendation #20: Subdivision Design. Update the Subdivision Ordinance to reflect any changes in the Zoning Ordinance relating to environmental protection and natural area preservation.

It should be noted that the provisions for a conventional subdivision will be retained in the Ordinance, and developers will be allowed to continue pursuing this option if desired.

5-2. Subdivision Regulations Open Space and Recreation Plan References

Section 4.9 provides complete and well-written requirements for park and open space dedication or alternative fee-in-lieu arrangements. It would be appropriate to reference the appropriate sections of the POCD and SEDP that refer to park and recreation facilities and to any published plans of the Conservation Commission.

Recommendation #21: Subdivision Regulation References to Adopted Park and Open Space Plans: Make minor adjustments to the Subdivision Ordinance referring to adopted park, recreation, and open space preservation plans.

5-3. Subdivision Landscaping Requirements

- The 75-foot minimum spacing of street trees is inadequate; a 60-foot minimum is recommended (the Zoning Ordinance specifies 50 feet). Street trees should be placed in the parkways on the public right-of-way, not the front yards. There should be further discussion on the adequacy of two-inch caliper trees; larger trees would be more desirable, but are less prone to survival in the first two years.
- It is a common practice to provide listings of both prohibited and required landscaping species. The prohibited listing would include invasive, exotic, non-hardy, or "messy" species.
- Many communities are now requiring that a variety of street tree species be provided; by avoiding monocultures, the community is protected from the impact of diseases killing all the trees along the streets.
- The submitted landscape plan should indicate the techniques that will be used during construction to preserve existing trees to be retained or relocated on site.

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Recommendation #22: Subdivision Tree Preservation and Species Lists. Make minor adjustments to the Subdivision Ordinance related to tree placement, acceptable species, and preservation of existing trees on a site.

5-4. Sidewalks, Paths, and Bikeways

- Section 4.7 of the Subdivision Regulations provides for trails as an alternative to sidewalks, when specified by the Planning Commission. Section 13, “Enhance Transportation Options” of the POCD recommends the establishment of a bikeway system in Groton. Specific plans have been developed, but need to be incorporated formally into the POCD. The Subdivision Regulations should include reference to any bikeway plans as a basis for requiring the substitution of bikeways for sidewalks. In other areas, particularly cluster developments, a system of internal paths, trails, and bikeways would be more appropriate than sidewalks.

Recommendation #23: Sidewalks, Paths, and Bikeways. Review and update the Subdivision Ordinance standards and requirements for bikeways, sidewalks, and pathways.

5-5. Subdivision Submittal Requirements

- The list of information required in Section 3 is extensive and includes detailed explanation.
- The 2004 electronic submittal provisions in Section 3.4 are out of date. Since these will be subject to continuing revision as technology changes, it would be appropriate to reference them in an appendix that could be modified without amending the Ordinance.
- In many locales, it is a common practice to require a formal statement of ownership, indicating the legal ownership of the property, the contract owner of the property, and the date the contract of sale was executed as part of the submittal requirements. This requirement forces applicants to resolve any internal ownership/representation issues before involving the jurisdiction in the process.

Recommendation #24: Subdivision Application Submittal Requirements. Review and update the Subdivision Ordinance application submittal requirements.

6. Inland Wetlands Regulations

Activities that might threaten or remove inland wetlands are regulated by Connecticut General Statutes, Chapter 440, *Wetlands and Watercourses*. The State, in effect, requires each municipality to adopt, enforce, and maintain its own inland wetlands regulations modeled on the State requirements. Groton’s Inland Wetlands (IW) Regulations were first adopted in the 1970s and have been amended seven times; nearly all of these amendments were procedural in nature. It appears that the Ordinance was amended in 1995 to update the list

of permitted uses in wetland areas; however, this section of the Groton IW Ordinance is virtually a *verbatim* replication of the permitted uses provisions in the Statutes.

Several adjustments have been made to Statutes since 2000, which may necessitate adjustment to Groton's IW Regulations. For instance, the following new provisions were added to Sec. 22a-41 in 2004:

“(c) For purposes of this section, (1) "wetlands or watercourses" includes aquatic, plant or animal life and habitats in wetlands or watercourses, and (2) "habitats" means areas or environments in which an organism or biological population normally lives or occurs.

“(d) A municipal inland wetlands agency shall not deny or condition an application for a regulated activity in an area outside wetlands or watercourses on the basis of an impact or effect on aquatic, plant, or animal life unless such activity will likely impact or affect the physical characteristics of such wetlands or watercourses.”

Most other statutory changes deal with procedures, fees, notification requirements, and other administrative matters.

Most of Groton's IW Regulations content deals with procedures related to the application and approval process and are heavily regulated by Statutes. Some improvements can be made in the clarity of writing, but the procedures themselves cannot be changed except in response to any recent changes to the Statutes. Other, more substantive changes would include:

Recommendation #25: Inland Wetlands Regulations Changes.

- Make adjustments to the Inland Wetlands Regulations that reflect any changes in Connecticut Statutes that have been adopted since 2000.
- Provide direct references to appropriate stormwater management practices and reference to the *Connecticut Stormwater Quality Manual* - similar to those changes recommended in the Zoning Ordinance and Subdivision Regulations.
- Add provisions and standards that would allow for very limited relocation of wetlands when it is determined that avoiding degradation or removal is infeasible. Wetland reconstruction, restoration, and relocation are proven to be effective practices. Wetland mitigation is a sound idea, and there are many specific examples of wetland impacts that have been successfully mitigated, provided the mitigation ratio is high enough.
- Adopt upland review area standards and procedures that conform to Connecticut Statutes.
- Adopt provisions to allow the administrative review and approval of minor activities within upland review areas.
- Possibly expand the upland review area with respect to critical wetlands and/or watercourses.